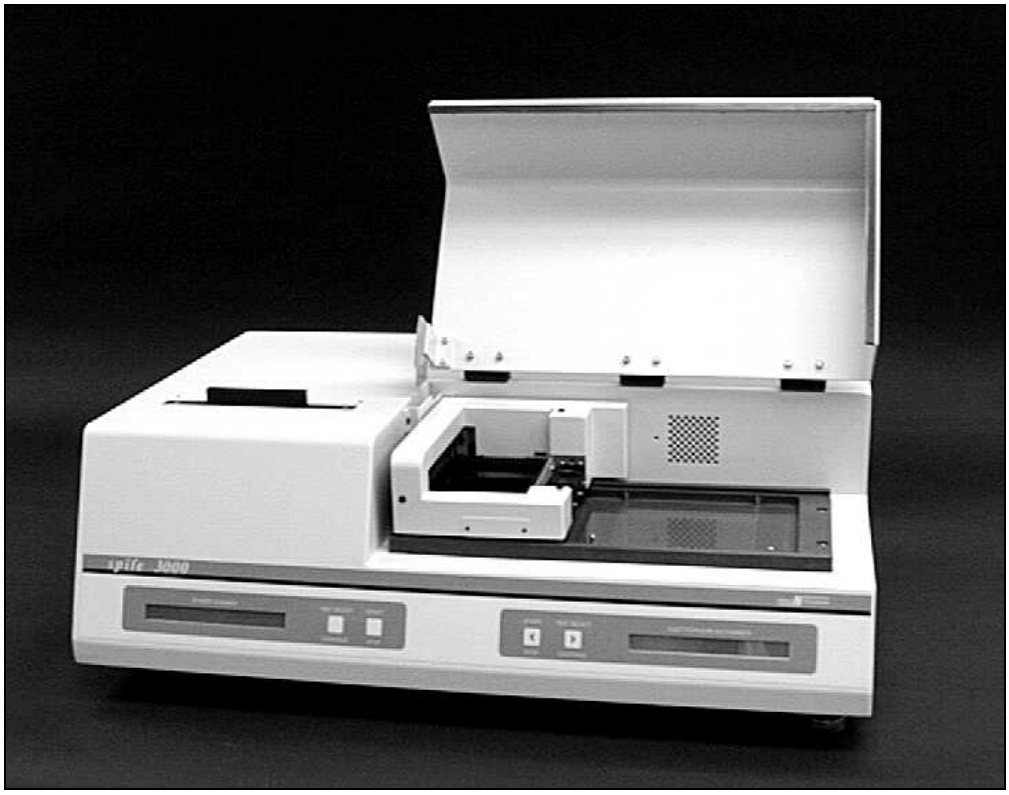
Helena Laboratories

SPIFE® 3000

Gel Electrophoresis and Processing



Operator's Manual

Catalog Number 1088, 120 Vac
Catalog Number 1089, 240 Vac

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Section 1 - Instrument Use and Function

Helena Laboratories' SPIFE 3000 (Figure 1-1) is used for automatic sample application, electrophoresis, automatic reagent application and spreading, staining, fixing, destaining, and drying of SPIFE agarose gels. It will completely process the gel for viewing or for quantitation of results on a densitometer. SPIFE 3000 is to be used only with Helena Laboratories SPIFE gels. SPIFE 3000 is intended for in-vitro diagnostic use only, and is for use in a laboratory or similar environment.

SPIFE 3000 contains preprogrammed parameters for SPIFE Serum Protein, Serum or Urine IFE, CSF IgG IEF, Acid Hemoglobin, Alkaline Hemoglobin, Alkaline Phosphatase, Cholesterol Profile, LD Isoenzyme, CK, Split Beta SPE, and Lipoproteins tests (for electrophoresis and staining) and QuickGel Acid Hemoglobin, Split Beta SPE, CK, LD Isoenzyme, and Alkaline Hemoglobin (for staining). You may alter the parameters for these tests, if desired. Additional tests will become available in the future and you will be able to program the SPIFE 3000 with those parameters.

The SPIFE 3000 automates or eliminates the technique-dependent steps of conventional electrophoresis. Samples are automatically applied to the gel, then electrophoresed. When appropriate, reagents are automatically spread on the gel and incubated.

Gels are moved to a gel holder and lowered into the staining chamber, where they are washed, stained, destained, fixed, and dried automatically. The processed gels can then be scanned with a densitometer and the results printed on a report form.

Refer to the procedure supplied with the reagents for information on the following areas:

Summary
Principle
Reagents
Instruments
Specimen Collection and Handling
Reagent Preparation
Sample Application
Test Procedure
Performance Characteristics
Stability of End Product
Reference Values
Evaluation of the Bands
Interpretation of Results
Bibliography

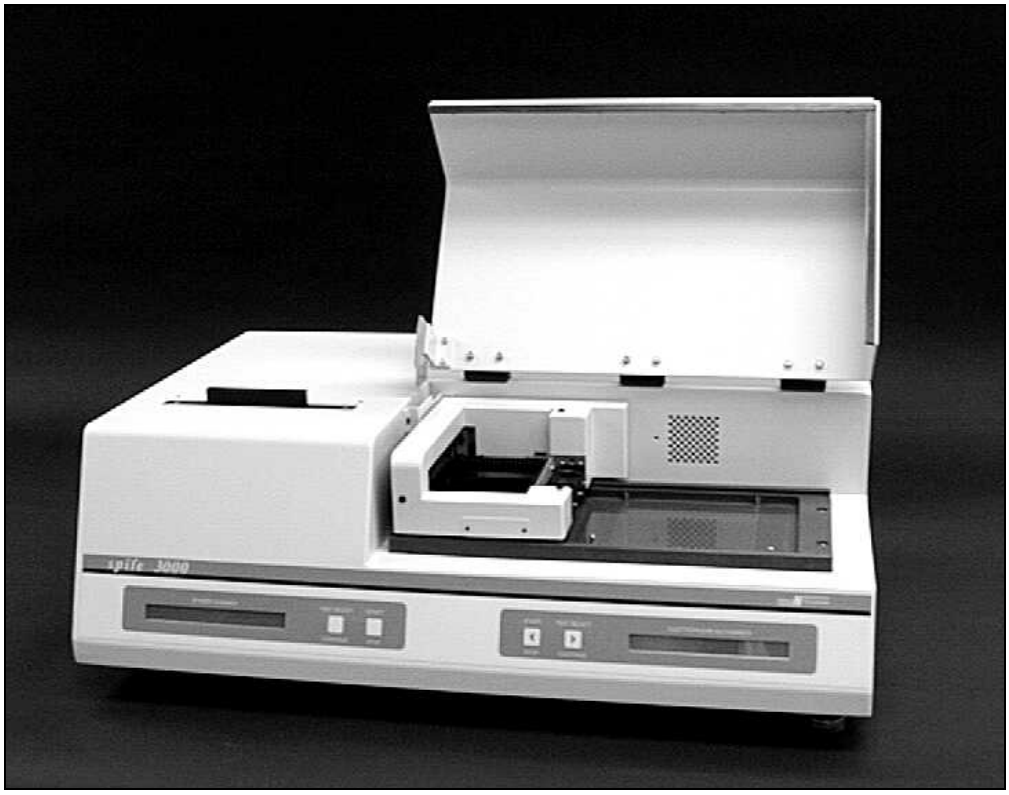


Figure 1-1 SPIFE 3000

Section 2 - Principles of Operation

The relationship of the functional units of the SPIFE 3000 are shown in Figure 1-1 and Figure 2-1. SPIFE 3000 is divided into two distinct parts, the applicator/incubation and electrophoresis side on the right, and the stainer side on the left. Operation is controlled by a microprocessor and its memory, and by four push keys.

The applicator consists of a rack which holds disposable blade applicators, a motor to move the blades to the sample and to the gel, a reagent dump bar, and a motor to move the bar. The electrophoresis side contains a power supply, electrodes, constant voltage output for electrophoresis, and electrophoresis chamber heating and cooling systems. The stainer side contains a heater/dryer blower, a gel chamber, gel carrier switch, fluid level detectors, temperature sensor, fluid valve, and fluid pump.

The microprocessor directs operation of the LCD display and the push keys let the operator respond to the displays. During a typical operation, the operator loads sample, selects the type of test, and can start or stop the automatic sequence of operations using the appropriate push keys. Any time a prompt appears which requires a user action, an alarm will sound until the user presses the indicated key.

Sample is manually loaded into sample wells and the operator positions the wells and the gel. The applicator then automatically picks up sample and applies it to the gel.

For electrophoresis and incubation, the gel is manually placed in the electrophoresis chamber. The electrodes are positioned, the door is closed and the right-hand **TEST SELECT/ CONTINUE** key is pressed to select a test, and **START/STOP** is pressed to start the selected test. Electrophoresis takes place at the programmed parameters when high voltage is applied across the electrodes and gel. If required by the test, incubation and pre-drying are accomplished by controlling and monitoring the temperature of the electrophoresis chamber.

If required by the test, the reagent is automatically applied and spread.

When prompted, the operator removes the electrodes, then the gel blocks. The electrodes are then replaced and the right-hand **TEST SELECT/CONTINUE** key is pressed to dry the plate. The gel is then placed in the stainer chamber.

When the left-hand **START/STOP** key is pushed, the microcomputer directs the fluid valve to open one of the fluid lines and turns on the fluid pump to fill the stainer chamber with the appropriate solution. A level detector signals the microcomputer when to stop the filling operation, and the pump is turned off. The operation is timed. When the time reaches zero, the microcomputer directs the fluid valve to open another line and turns the pump on again. The pump empties the solution through a fluid drain.

This sequence of events is repeated for each necessary solution in the staining, fixing, and destaining procedures. If agitation is required, the fluid pump moves solution in and out of the stainer chamber.

The microcomputer then signals the heaters in the staining chamber to heat the chamber to drying temperature. An air fan blows heated air through the chamber. Temperature is controlled by a sensor. When drying time reaches zero, the microcomputer turns off the heaters and an alarm notifies the operator that the procedure is complete.

The computer initializes at power on and runs a self-test to detect error conditions or potential problems. If an error is detected, the computer responds by displaying an error message (see section 10.2, Troubleshooting).

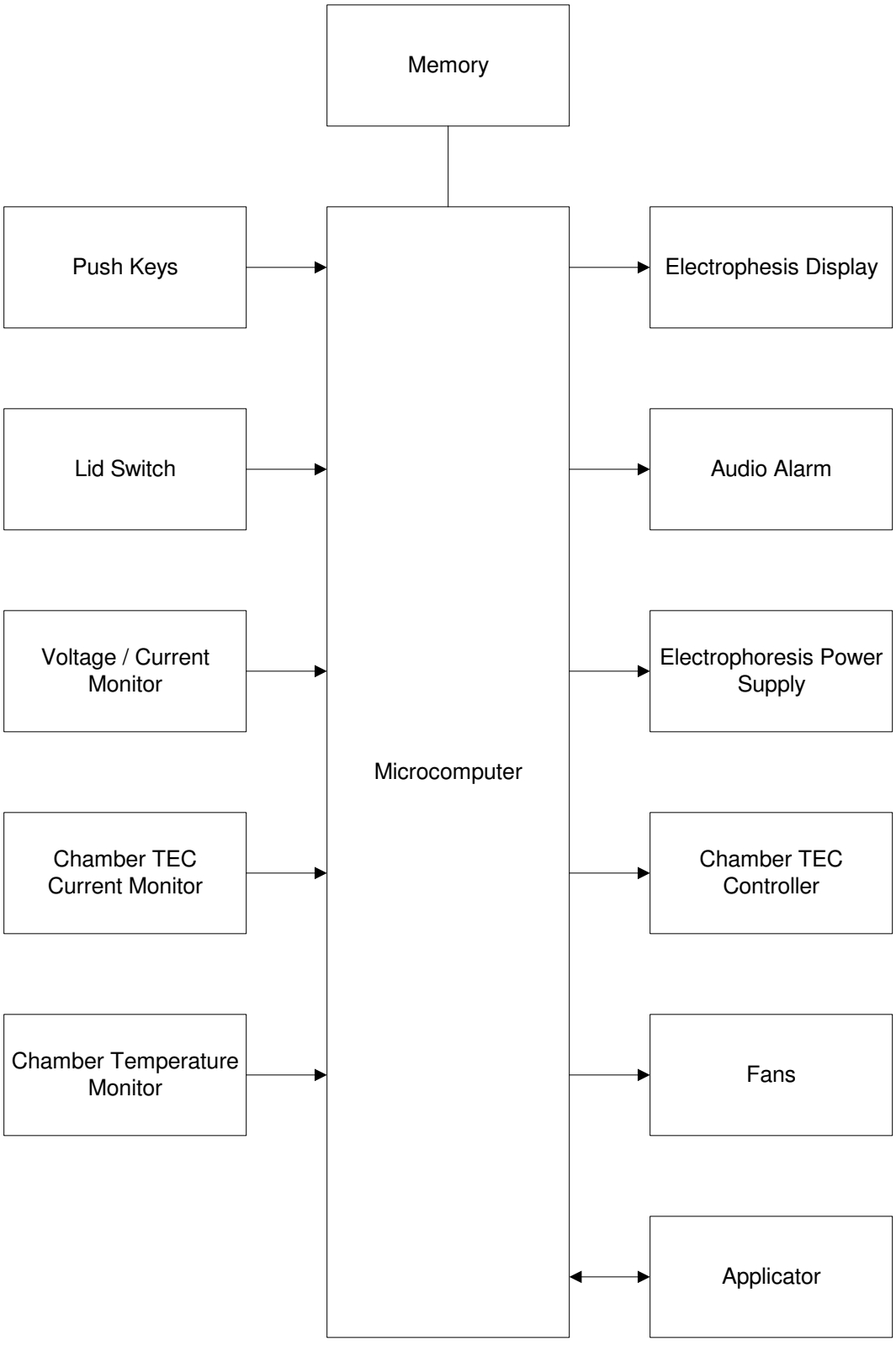


Figure 2-1 Signal Flow Diagram, Electrophoresis Side

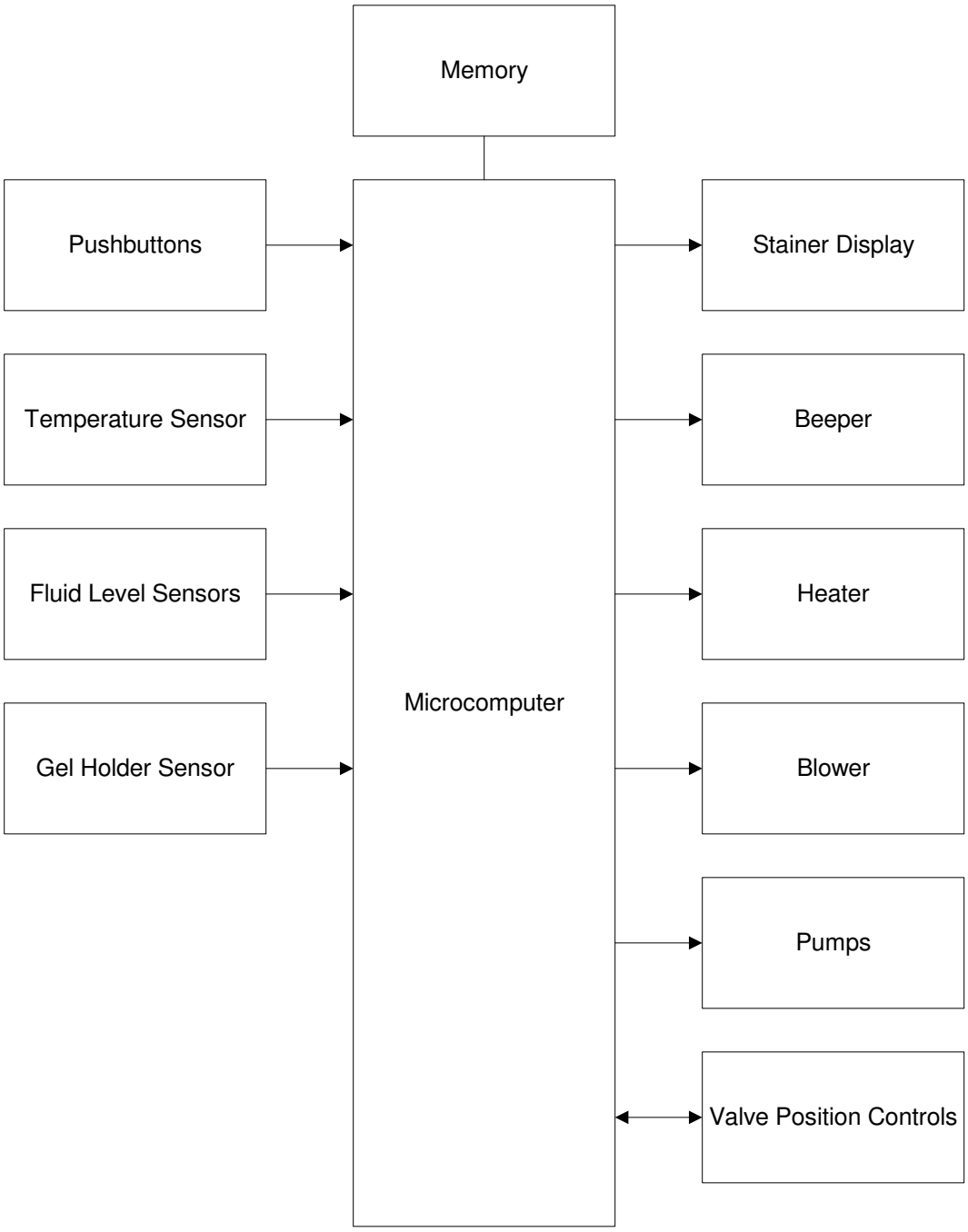


Figure 2-2 Signal Flow Diagram, Stainer Side

Section 3 - Precautions and Limitations

3.1. The entire operator's manual should be read and understood before attempting instrument operation.

3.2. Refer to the procedure supplied with the gels and reagents for proper gel orientation, reagent preparation, specimen collection and handling, and other information.

3.3. Use only reagents and gels made specifically for use with SPIFE instruments. Refer to the procedures supplied with the reagents for precautions and limitations specific to the reagents.

3.4. Do not expose the instrument to drafts or to direct sunlight. Do not operate at temperatures above 80°F (27°C) or below 59°F (15°C), or allow prolonged exposure to high humidity.

3.5. Do not place the instrument near a strong source of electromagnetic interference, such as a centrifuge, x-ray machine, etc.

3.6. Provide adequate room on all sides of the instrument for good air circulation.

3.7. Do not block air vents or intakes.

3.8. To prevent damage to the SPIFE 3000, never place objects on the top of the instrument. Keep the gel holder installed in the stainer at all times.

3.9. This instrument should not be connected to any other devices or instruments in any way not described in this manual.

3.10. Do not expose the sample tray to temperatures above 158°F (70°C), or severe warping of the tray may result, making the tray unsuitable for use.

3.11. Installation should not be attempted unless a representative of Helena Laboratories or of its subsidiaries or distributors is present, or, unless verbal or written permission to proceed has been given by Helena Laboratories, its subsidiaries or distributors.

3.12. The instrument should not be moved once the Helena Laboratories approved representative has installed the instrument. For ALL moves, the instrument's shipping bracket, used to lock the applicator sled in place, must be installed. Improper handling of the applicator sled could result in the instrument needing realignment, which can only be completed by a Helena Laboratories representative.

3.13. This instrument meets the leakage current specifications of directive EN 61010-1. To meet standards more stringent than this, we recommend either grounding the instrument to station ground via the ground lug provided on the back of the instrument, or the purchase of an isolation transformer. Specifications for this transformer are given in section nine.

3.14. For emergency shut down, disconnect the SPIFE 3000 power cord.

3.15. All tubing must be securely connected to fittings to prevent leaks.

3.16. Before starting electrophoresis verify the following. The sample gels are oriented correctly. The sample cups are installed correctly and are fully seated in the sample tray. The applicator blades are properly seated and installed in the slots indicated in the procedure supplied with the reagents. The reagent bottle is installed correctly and fully seated in the dump bar, if applicable.

3.17. Due to high heat, do not touch the surfaces of the electrophoresis chamber immediately after pre-drying.

3.18. Should an instrument be contaminated by blood or blood derivative, spray any contaminated surface with a commercial virucidal and germicidal agent. Observe where the specimens are used inside the instrument and confine cleaning to that area. Wipe up the residue. These

materials contain corrosives and are harmful to metal surfaces.

No harsh cleansers, acids, or bases should be used or spilled on inner or outer surfaces. Do not immerse the unit. **ALWAYS UNPLUG THE MAIN POWER CORD BEFORE CLEANING.**

Section 4 - Hazards

4.1. If the instrument is used in a manner not specified by this manual, the protection provided by equipment design may be impaired.

4.2. This device contains very high voltages which can be extremely dangerous. Safeguards are built into the instrument to prevent user contact with high voltage; however, **ALWAYS TURN OFF THE POWER, DISCONNECT THE MAIN POWER CORDS, AND USE EXTREME CARE** when attempting disassembly for cleaning, repair, or adjustments.

4.3. Shock hazard. Never touch the cables at the rear of the SPIFE 3000 during operation. When the electrophoresis chamber lid is open, power to the chamber is cut off. However, never touch the electrophoresis chamber during electrophoresis.

4.4. Do not attempt to operate the instrument without plugging the power cords into a grounded wall outlet of the proper voltage and frequency. This information is contained on the serial number plate located on the back of the instrument.

4.5. **Do not operate with the cover removed.** Do not place fingers under the applicators.

4.6. Do not lubricate any parts of the instrument not specified by Helena Laboratories.

4.7. Do not touch the gel chamber anywhere except where directed by the labeling. The inner surfaces of the gel chamber reach temperatures of 60° to 70°C and can cause burns.

4.8. Use only the reagents specified by the Helena procedure in use. Damage to the instrument may result from introducing some types of solutions into the instrument.

4.9. Follow safe handling and disposal procedures for reagents used with this instrument.

4.10. Keep flammable liquids and flammable vapors away from the instrument at all times.

Section 5 - Controls and Displays

1. Main Power Switch: A switch on right side of SPIFE 3000 which controls power to the instrument (Figure 5-2).

2. Displays: Two liquid crystal displays are provided, one for the electrophoresis chamber and one for the staining chamber. Each is 2-lines with 40 characters per line. The displays show test type, prompts and status, or messages throughout operation (Figure 5-1).

The displays for the electrophoresis and stainer sides shown on Figure 5-3, all appear for test programming (*EDIT* mode); however, only the selected displays appear when performing a test or while viewing a test's programming (*READ* mode). A display's first line is the prompt to the user and the second line is the instrument operation.

Electrophoresis Chamber

3. START/STOP Key: Starts or stops operation of electrophoresis chamber (Figure 5-1).

4. TEST SELECT/CONTINUE Key: Selects test type and is used as a means of operator response to displayed prompts (Figure 5-1).

The **START/STOP** and **TEST SELECT/ CONTINUE** keys are also used while programming test parameters.

Stainer Chamber

5. START/STOP Key: Starts or stops operation of staining chamber (Figure 5-1).

6. TEST SELECT/CONTINUE Key: Selects test type and is used as a means of operator response to displayed prompts (Figure 5-1).

The **START/STOP** and **TEST SELECT/ CONTINUE** keys are also used while programming test parameters.

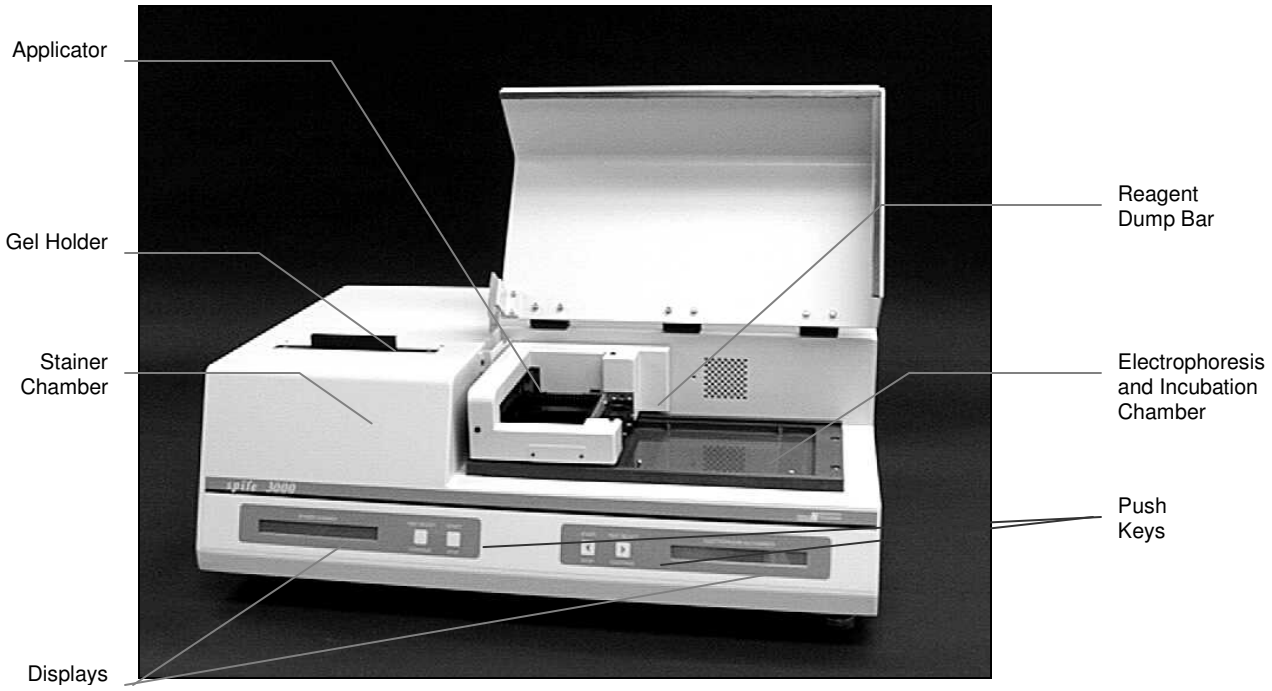


Figure 5-1 SPIFE 3000 Controls and Displays

Figure 5-2 Power On/Off Switch, Right Side

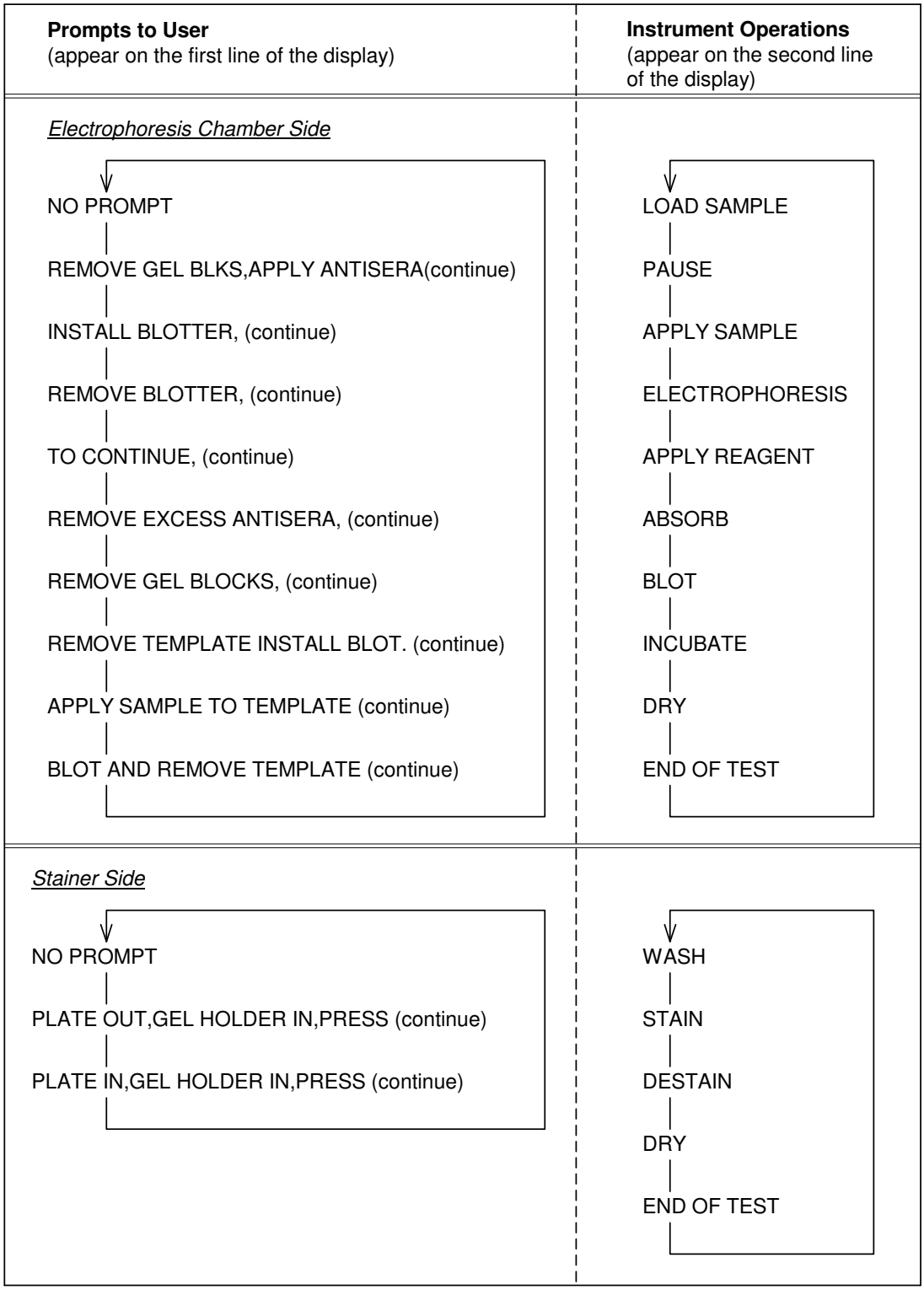


Figure 5-3 SPIFE 3000 Menus

Section 6 - Installation Instructions

WARNING: Read Section Three (Precautions and Limitations) and Section Four (Hazards) before attempting installation or operation.

6.1. Unpacking and Inspection

1. Check all shipping containers for signs of damage. If damage is found, immediately notify the shipping carrier.

2. Carefully unpack the instrument and accessories and remove them from the shipping cartons. The packing material should be removed undamaged, if possible, should repacking be necessary.

CAUTION: The instrument and its components are heavy. Use a minimum of two people to lift the instrument. Lift only from the bottom surface of the instrument. Use approved lifting techniques when moving the instrument.

3. Remove plastic wrappings from the instrument and accessories. If scissors or a knife are used to cut the plastic or binding tape, take care not to scratch the instrument.

4. Inspect the instrument for any obvious signs of damage. If damage is found, notify the shipping carrier and Helena Laboratories.

5. Inventory all items. If any parts are missing, recheck the packing materials before notifying Helena Laboratories.

Table 6-1 Inventory

1 SPIFE 3000
5 Reagent Vats
1 Waste Vat
3 Stain Cap Assemblies with Tubing
1 Waste Vat Cap Assembly with Level Sensor, Shorting Plug, Elbow Fitting, and Tubing
2 Destain/Wash Cap Assemblies with Tubing
3 Applicator Weights
1 Screwdriver
1 Level
8 Fuses, Assorted
1 Power Cord
1 SPIFE Gel Block Remover, Cat. No. 1115
1 Replacement Electrodes for REP 3 and SPIFE, 2/pkg, Cat. No. 3709
1 SPIFE Maintenance Swabs, 5/pkg, Cat. No. 1113
1 REP/SPIFE Contact Sheets, Cat. No. 1361
1 Tips for IFE-6/3 Multi-Channel Pipette, 72/pkg, Cat. No. 3402
1 Reagent Spreaders for SPIFE 3000 and REP 3, 2/pkg, Cat No. 3706
1 Installation Report
1 Operator's Manual

Available Supplies

Cat #	Product Description
1111	SPIFE QuickGel Electrode, 2/pkg
1346	Pos ID Barcode Reader & Cabling
1666	Pos ID Barcode Labels, 1000/pkg
3357	SPIFE QuickGel Dispo Stainless Steel Electrode, 3/pkg
3358	SPIFE QuickGel Holder, 1/pkg
3359	SPIFE QuickGel Chamber Alignment Guide (usage instructions included in the procedures supplied with the applicable reagents)
3360	SPIFE Dispo Sample Cups - Deep Well
3364	SPIFE 2000/3000 20-80 Dispo Cup Tray

3366	SPIFE 2000/3000 20-100 Dispo Cup Tray
3369	SPIFE Dispo Sample Cups - Shallow Well, 100/pkg
3370	SPIFE 2000/3000 20, 40, 60 Dispo Cup Tray
3388	SPIFE Disposable Stainless Steel Electrodes, 3/pkg

6.2. Installation

NOTE: The SPIFE 3000 is a "Category II" device under EN 61010-1 and is for use in a laboratory or similar environment.

6.2.1. Selecting Instrument Location

1. Select an environment free of drafts, direct sunlight, excessive humidity and dust, and large temperature fluctuations. Ambient temperature should be between 59° to 80°F (15° to 27°C).

2. Locate the instrument on a level, flat surface, near an easily accessible wall outlet.

3. The location needs to be large enough to allow proper air circulation around the instrument and provide space to place the vats (Figure 6-3). All reagent vats connected to the instrument must be vented to the atmosphere, and must be placed on the same surface as the instrument for the stainer chamber to operate. The waste vat must be placed below the instrument.

6.2.2. Removing Shipping Bracket & Leveling Instrument

1. Unscrew the thumbscrew securing the shipping bracket located in the electrophoresis chamber (Figure 6-1). Remove the bracket and thumbscrew (Figure 6-2). Store the bracket and thumbscrew for future use.

2. Place the provided bubble level in the center of the electrophoresis chamber and adjust the two feet on the lower right side to level the chamber floor. The floor should be level both from side-to-side and front-to-back.

6.2.3. Connecting Vats & Instrument

1. Only remove the port cap as you install the tubing to that port.

2. Attach the two lengths of 3' tubing to their vat caps. Attach the vat caps to the Wash vat and the Destain vat. Route the tubing from the vat caps through each vat's handle. This supports the tubing, preventing it from crimping at the vat cap. Attach the tubing from the Wash vat to port 1 and the tubing from the Destain vat to port 2. (Ports are located on the left side of the instrument, see Figure 6-4).

3. Attach the two lengths of the 2' tubing, included with the two like sized vat caps, to ports 3 and 5, located on the left side of the instrument (Figure 6-4). Attach each of the other ends of these tubes to their vat cap. Place the vat cap attached to port 3 to a Stain vat and the vat cap attached to port 5 to the other Stain vat.

4. Attach one length of 2' tubing to port 7, located on the left side of the instrument (Figure 6-4). Attach the other end of this tubing to the vat cap. Fill the Maintenance Wash vat with deionized water. Attach the vat cap to the Maintenance Wash vat.

5. Attach the length of 4' tubing to port 4, located on the left side of the instrument (Figure 6-4). Note that port 4 can only be used for waste.

6. Attach the 1 1/2" end of the of the 6' tube plus elbow fitting plus 1 1/2" tube assembly to the catch pan port located under the right rear of the instrument, as viewed from the back (Figure 6-5). Confirm that the flow of fluid is not restricted

either by the orientation of the elbow fitting or because the 6' piece of tubing raises above the level of the catch pan.

7. If you use the Waste vat for waste collection, attach the other ends of the tubes from port 4 and the catch pan port to the barbed fittings on the Waste vat cap. Put the Waste vat cap securely on the Waste vat. Check the length of the tubing to insure that no loops form below the Waste vat cap (Figure 6-3), adjust tube length as needed.

8. If you use the Waste vat, connect the level sensor to the top of the Waste vat cap. Plug the other end into the receptacle located at the rear of the instrument, labeled "OVERFLOW SENSOR INTERCONNECT" (Figure 6-5).

9. You may chose to run the tubing from port 4 and the catch pan port to a sink for waste dispose, instead of the Waste vat. When you use a sink, you must use the Shorting Plug instead of the level sensor. Plug the Shorting Plug into the receptacle located at the rear of the instrument, labeled "OVERFLOW SENSOR INTERCONNECT" (Figure 6-5).

NOTE: The waste tubing should always remain unrestricted between the instrument and waste drain or vat.

10. Check that any ports on the instrument not used are left capped. Insure that all tubing is securely connected to fittings to prevent leaks.

6.2.4. Power Cord & Parts Handling

1. Confirm that the main power switch is off and plug the SPIFE 3000 power cord into the outlet provided on the back of the instrument (Figure 6-5).

Plug the power cord into a grounded wall outlet of the proper voltage and frequency. These specifications can be found on the serial number plate located on the back of the instrument.

The wall outlet should not be on the same circuit as any large load device such as a refrigerator, compressor, centrifuge, etc. The instrument's circuitry contains filters to reduce the effect of line voltage fluctuations; however, they should still be avoided. If the operator experiences difficulty, it may be necessary to install an isolation transformer.

NOTE: A detachable power cord used with this instrument must have been selected by an agent of Helena Laboratories that is an approved type suitable for application and acceptance by local registry authorities in the country which it is used, based on the serial tag specifications for voltage and current.

NOTE: The SPIFE 3000 meets the leakage current specifications of directive EN 61010-1. To meet standards more stringent than this, we recommend either grounding the instrument to station ground via the ground lug provided on the back of the instrument, or the purchase of an isolation transformer. Specifications for this transformer are given in section nine.

2. You may store the electrodes and glass spreader in the electrophoresis chamber when the instrument is not in use.

3. The barcode reader, an optional accessory, is used for positive patient ID and plugs into the outlet provided on the back of the instrument (Figure 6-5).

4. Prime the stainer pump using the following steps: With the power off, pour approximately 100mL of tap water into the stainer chamber, from the top. Wait a few minutes, allowing time for the fluid to backfill the pump tubing and wet the pump.

5. Turn the main power switch on. The instrument empties the chamber and initializes and performs a brief self-test. Once complete, the displays should show the name of the first enabled tests. If an error message appears instead, refer to the section on Troubleshooting, 10.2.

6.3. Programming for Tests

Test parameters can be altered for both sides of SPIFE 3000. This allows you to add tests as they become available or to change parameters for preprogrammed tests.

NOTE: Alteration of factory programming may compromise results. To retrieve factory programmed parameters, refer to section 6.4.2 step 4.b.

NOTE: If programming is modified, record your programmed parameters and the date programmed, for future reference.

NOTE: If you accidentally enter a calibration procedure, press TEST SELECT/ CONTINUE to exit. Calibration is to be performed only by an authorized representative of Helena Laboratories.

6.3.1. Electrophoresis Test Programming

1. Power should already be on. Press the **TEST SELECT/CONTINUE** key to scroll through the list of tests to locate the test you wish to select.

2. To select the displayed test, for review or editing, ***simultaneously press*** both the **TEST SELECT/CONTINUE** and **START/STOP** keys on the electrophoresis side of the SPIFE 3000. The following display appears.

TO READ (start) TO EDIT (continue)

3. If you want *TO READ* the test parameters without making any changes, push the **START/STOP** key. The *READ* function will begin with the first operation of the test. The display will resemble the example display shown for SPE test. Press either key to cycle through the selected test's operations. At the *END OF TEST* display, press either key to exit the *READ* mode and return to the list of tests.

4. If you want *TO EDIT* the test parameters, push the **TEST SELECT/CONTINUE** key. The *EDIT* function will begin with the first operation of the selected test and the display will resemble the example display shown for SPE test.

a. If you want *TO EDIT* the displayed operation, press and hold either key for 1/2 second. A beep will be heard. The underscore will indicate the parameter of the displayed operation currently available to modify.

b. To move the underscore forward, press the **TEST SELECT/CONTINUE** key for 1/2 second. To move the underscore backwards, press the **START/STOP** key for 1/2 second.

c. To increase the parameter indicated by the underscore, press the **START/STOP** key for less than 1/2 second. To decrease the parameter indicated by the underscore, press the **TEST SELECT/CONTINUE** key for less than 1/2 second.

d. To terminate the editing of an operation, move the underscore to the last parameter of the bottom line of the display and press and hold the **TEST SELECT/CONTINUE** key for 1/2 second.

e. To scroll through the operations within the selected test, either after a change is made or to view the next operation, press either key for less than 1/2 second.

f. Select *END OF TEST* as the last operation of each test. Press **TEST SELECT/ CONTINUE** for 1/2 second to exit the *EDIT* mode and return to the list of tests.

Example display for SPE test:

```
NO PROMPT
LOAD SAMPLE      :30   21° C   SPD1
```

NO PROMPT means the displayed operation will occur automatically. Any other prompt means you must perform the action indicated.

LOAD SAMPLE :30 21°C SPD1 display shows that the first operation for electrophoresis is to automatically load sample blades, holding them in the cups for 30 seconds, at a temperature of 21°C, and the blade applicators are at speed 1.

5. Any new parameters are now stored in memory and are permanent until you reprogram the test. You can continue *TO READ* or *TO EDIT* tests, or begin operation as described in section seven.

6.3.2. Stainer Test Programming

1. Power should already be on. Press the **TEST SELECT/CONTINUE** key to scroll through the list of tests to locate the test you wish to select.

2. To select the displayed test, for review or editing, ***simultaneously press*** both the **TEST SELECT/CONTINUE** and **START/STOP** keys on the stainer side of the SPIFE 3000. The following display appears.

```
TO EDIT (continue)  TO READ (start)
```

3. If you want *TO READ* the test parameters without making any changes, push the **START/STOP** key. The *READ* function will begin with the first operation of the test. The display will resemble the example display shown for SPE test. Press either key to cycle through the selected test's operations. At the *END OF TEST* display, press either key to exit the *READ* mode and return to the list of tests.

4. If you want *TO EDIT* the test parameters, push the **TEST SELECT/CONTINUE** key. The *EDIT* function will begin with the first operation of the selected test and the display will resemble the example display shown for SPE test.

a. If you want *TO EDIT* the displayed operation, press and hold either key for 1/2 second. A beep will be heard. The underscore will indicate the parameter of the displayed operation currently available to modify.

b. To move the underscore forward, press the **START/STOP** key for 1/2 second. To move the underscore backwards, press the **TEST SELECT/CONTINUE** key for 1/2 second.

c. To increase the parameter indicated by the underscore, press the **START/STOP** key for less than 1/2 second. To decrease the parameter indicated by the underscore, press the **TEST SELECT/CONTINUE** key for less than 1/2 second.

d. To terminate the editing of an operation, move the underscore to the last parameter of the bottom line of the display and press and hold the **START/STOP** key for 1/2 second.

e. To scroll through the operations within the selected test, either after a change is made or to view the next operation, press either key for less than 1/2 second.

f. Select *END OF TEST* as the last operation of each test. Press **START/STOP** for 1/2 second to exit the *EDIT* mode and return to the list of tests.

Example display for SPE test:

NO PROMPT			
STAIN	4:00	REC=OFF	VALVE=2

NO PROMPT means the displayed operation will occur automatically. (Other prompts require you to perform the action indicated.)

STAIN 4:00 REC=OFF VALVE=2 display shows that the stain tubing is purged (if purge time is other than zero), stain fills the chamber, remains for 4 minutes without being circulated and port 2 is the source of the stain.

5. Any new parameters are now stored in memory and are permanent until you reprogram the test. You can continue *TO READ* or *TO EDIT* tests, or begin operation as described in section seven.

6.4. Setup Customizing

1. You can customize the instruments features through the setup lists. The following steps apply to accessing both the electrophoresis and stainer sides' setup list.

a. With the instrument's power off, ***simultaneously press and hold*** both the **TEST SELECT/CONTINUE** and **START/STOP** keys of the side of the instrument you want to alter.

b. Turn the main power switch on.

c. A checker pattern will appear on the display of the side of the instrument you are altering.

d. Release both the keys.

e. The setup list appears, beginning with *LANGUAGE, IDIOMA*.

6.4.1. Language

The first display of the setup lists on both the electrophoresis and stainer sides deals with the language the display uses.

1. If *LANGUAGE, IDIOMA* is not currently displayed, press the **TEST SELECT/CONTINUE** key until it appears on the display.

2. Press the **START/STOP** key and the following display appears.

Language
English, Espanol

3. The cursor is located on the E of English. To move the cursor forward use the **TEST SELECT/CONTINUE** key and to move the cursor backward use the **START/STOP** key. Place the cursor on the first letter of the desired language.

4. Press both keys to select the indicated language and return to the next item on the setup list.

6.4.2. Test List

The second display of the setup lists on both the electrophoresis and stainer sides deals with the list of tests. You can customize the list by disabling unused tests. Tests may be enabled at a later date, if necessary.

1. If *SET PARAMETERS TO DEFAULT* is not currently displayed press the **TEST SELECT/CONTINUE** key until it appears on the display.

2. Press the **START/STOP** key and the following display appears.

SERUM PROTEIN
(start) DISABLE OR (continue) ENABLE TEST

3. To *DISABLE*, or remove, the test from the list of available tests, press **START/STOP**. The next test name will be displayed with the same options as the above example display.

4. To *ENABLE*, or place, the test on the list of available tests, press **TEST SELECT/ CONTINUE** and the following display appears.

SERUM PROTEIN
(start) NO CHANGE (continue) SET TO DEFAULT

a. If you want the currently programmed parameters of the test to remain, press **START/STOP** for *NO CHANGE*.

b. If you want the factory default parameters for the test reprogrammed, press **TEST SELECT/CONTINUE** for *SET TO DEFAULT* (refer to reagent procedure).

5. After you press **START/STOP** or **TEST SELECT/CONTINUE**, the next test on the list will appear, similar to the example display in step 2.

6. After all tests on the list have been cycled through, the instrument returns to the next item on the setup list.

6.4.3. Adjust Alarm Volume

The third display of the setup lists on both the electrophoresis and stainer sides allows you to adjust the volume of the alarm.

1. If *ADJUST ALARM VOLUME* is not currently displayed, press the **TEST SELECT/ CONTINUE** key until it appears on the display.

2. Press the **START/STOP** key and the following display appears.

on the Electrophoresis side:

(s/s) ↓ (ts/c) ↑ QUIT (both) 10

on the Stainer side:

(ts/c) ↓ (s/s) ↑ QUIT (both) 10

3. Press the appropriate key to increase ↑ or decrease ↓ the volume as desired. The volume setting is represented by a number from 1 (the lowest) to 36 (the loudest). This number appears on the second line of the display (in the above example the volume is set to ten).

4. Simultaneously press both keys to store the selection and return to the next item of the setup list.

6.4.4. Key Beep

The fourth display of the setup lists on both the electrophoresis and stainer sides allows you to choose whether or not to have the instrument beep as the keys are pressed.

1. If *ENABLE/DISABLE KEY BEEP* is not currently on the display, press **TEST SELECT/CONTINUE** until it appears on the display.

2. Press the **START/STOP** key and the following display appears.

(continue) TO CHANGE, (both) TO EXIT OFF

3. Press the **TEST SELECT/CONTINUE** key to turn the beep on or off when a key is pressed. The status, either *ON* or *OFF*, is displayed on the bottom line.

4. Simultaneously press both keys to store the selection and return to the next item of the setup list.

6.4.5. Positive Patient ID

On the electrophoresis side only, the fifth display of the setup list allows you to use a barcode reader to positively identify sample tray and gel to make sure they go together.

1. If *ENABLE/DISABLE POSITIVE PATIENT ID*, is not currently on the display press the **TEST SELECT/CONTINUE** key until it appears on the display.

2. Press the **START/STOP** key and the following display appears.

(continue) TO CHANGE, (both) TO EXIT OFF

3. Press **TEST SELECT/CONTINUE** to enable or disable positive patient ID. The status, either *ON* or *OFF* is displayed on the bottom line.

4. Simultaneously press both keys to store the selection and return to the next item on the setup list.

6.4.6. Reagent Detection

On the electrophoresis side only, the sixth display of the setup list allows you to use the reagent detection to monitor the presence and absence of the reagent bottle in the dump bar.

1. If *ENABLE/DISABLE REAGENT DETECT* is not currently on the display, press **TEST SELECT/CONTINUE** until it appears on the display.

2. Press the **START/STOP** key and the following display appears.

(continue) TO CHANGE, (both) TO EXIT OFF

3. Press **TEST SELECT/CONTINUE** to enable or disable reagent detection. The status, either *ON* or *OFF*, is displayed on the bottom line.

4. Simultaneously press both keys to store the selection and return to the next item of the setup list.

6.4.7. Purge Time

On the stainer side only, the fifth display of the setup list, allows you to set the duration of the purge cycle.

1. If *ADJUST PURGE TIME* is not currently displayed, press the **TEST SELECT/ CONTINUE** key until is appears on the display.

2. Press the **START/STOP** key and the following display appears.

DEFAULT TIME (continue), ADJUST (start)

3. If you want the purge time to remain the default time of three seconds, press the **TEST SELECT/CONTINUE** key. The display will return to the next item of the setup list.

4. If you want a purge time of other than 3 seconds, press **START/STOP** and the following display appears.

ADJ. PURGE TIME UP (continue),DOWN (start) 3 Sec.

a. Press **TEST SELECT/CONTINUE** to increase or **START/STOP** to decrease the purge time in 1 second increments from 0 to 5 seconds. **You can disable the purge by selecting a time of 0 seconds; however, do not disable purge if using more than one type of stain.**

CAUTION: Excessive purge time may cause loss of stain.

b. When the desired time is displayed, simultaneously press both keys to store the selection and return to the next item on the setup list.

6.4.8. Return to Main Program

The last display of the setup lists on both the electrophoresis and stainer sides allows you to return to that side's main menu.

1. If *RETURN TO MAIN PROGRAM* is not currently displayed press the **TEST SELECT/ CONTINUE** key until it appears on the display.

2. Press the **START/STOP** key and the display shows the main menu for that side.

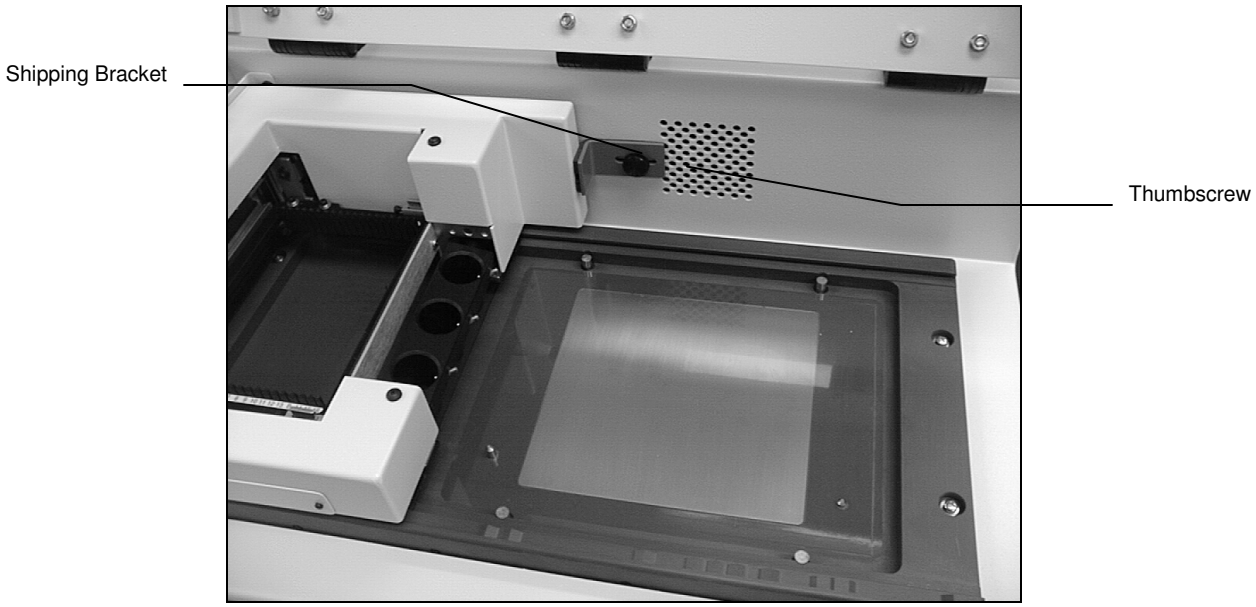


Figure 6-1 Shipping Bracket Installed

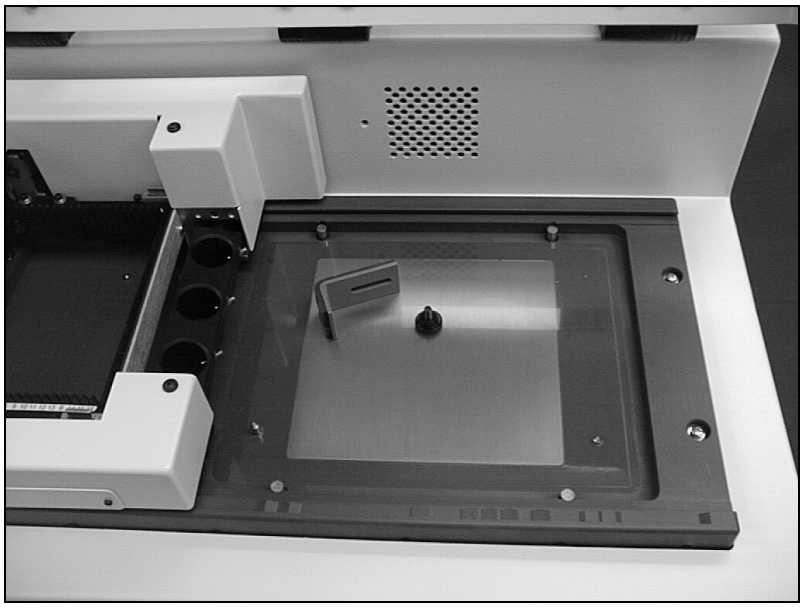


Figure 6-2 Shipping Bracket Removed

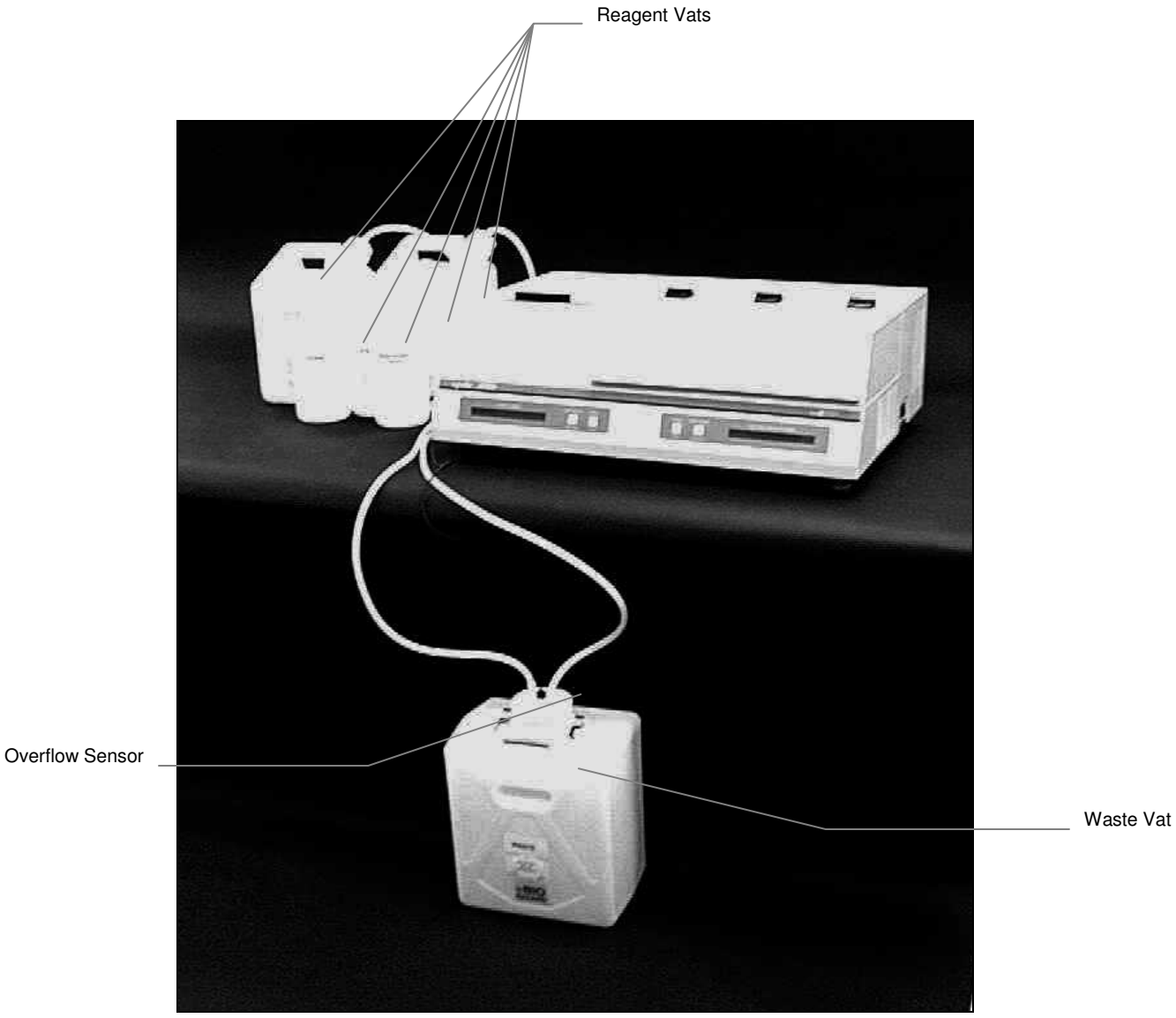


Figure 6-3 SPIFE 3000 Installation

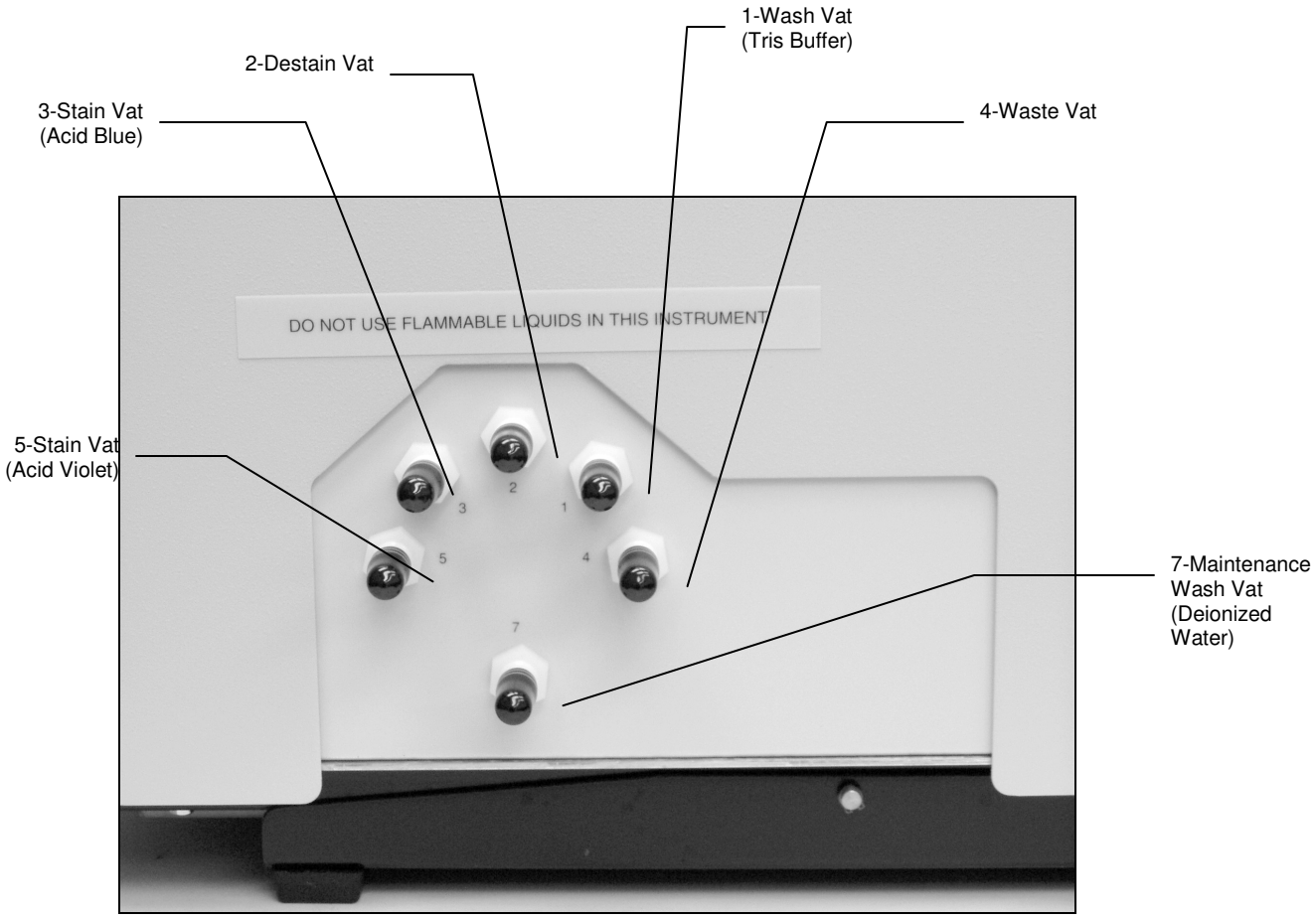


Figure 6-4 Ports and Tubing, Left Side

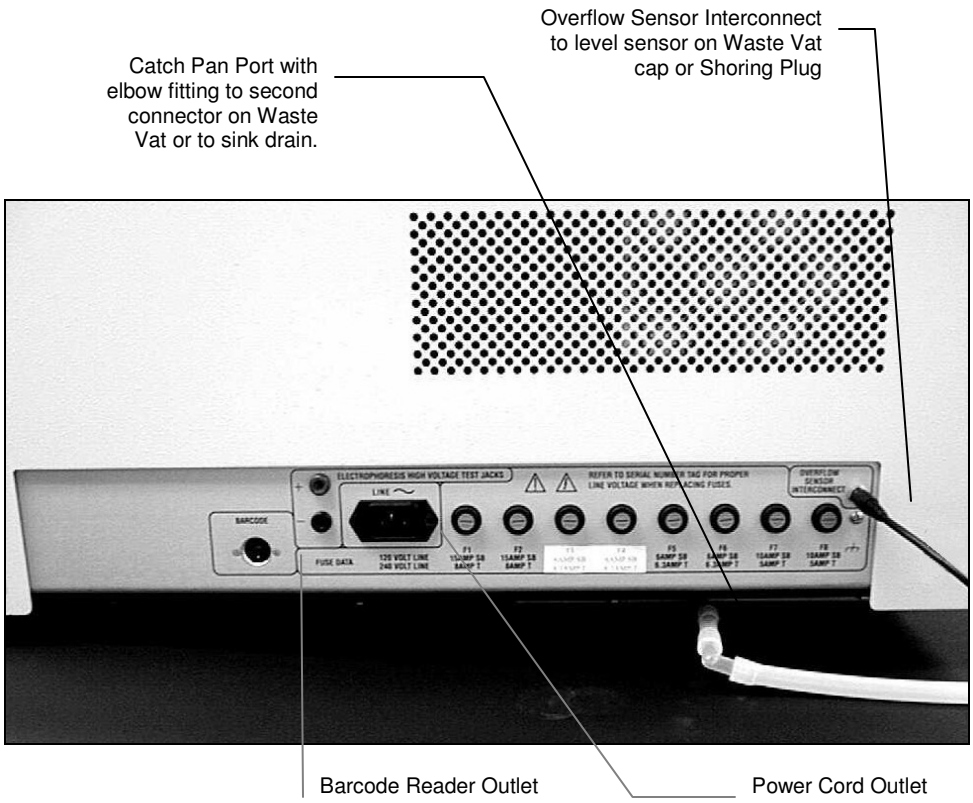

Overflow Sensor Interconnect to level sensor on Waste Vat cap or Shoring Plug
Catch Pan Port with elbow fitting to second connector on Waste Vat or to sink drain.
Barcode Reader Outlet
Power Cord Outlet

Figure 6-5 Connection for Barcode Reader, Power Cord, Catch Pan Port, and Overflow Sensor (or Shorting Plug), Back

Section 7 - Operating Instructions

7.1. Preparation

7.1.1. CAUTIONS

1. To prevent damage to the SPIFE 3000, never place objects on the top of the instrument.

2. Do not block air vents and intakes. They are located on the right side, rear, and the bottom of the instrument.

3. Keep flammable liquids and flammable vapors away from the instrument at all times.

4. Electrodes are fragile and will break if dropped. Do not allow the edges of the electrodes to touch the instrument housing.

5. Keep the gel holder installed in the stainer at all times.

7.1.2. Powering Up Instrument

1. **If SPIFE 3000 has not been used for an extended period of time, the pump must be re-primed before the power is turned on.** If used recently, go to step 2.

a. With the power turned off, pour approximately 100 ml of tap water into the stainer chamber, from the top.

b. Wait a few minutes, allowing time for the fluid to back-fill the pump tubing and wet the pump. When the power is turned on in step 4, the SPIFE 3000 will empty the chamber and prime the pump.

2. The Destain vat and the Maintenance Wash vat, should always contain fluid. The Stain vat, containing Acid Blue stain, and the Stain vat, containing Acid Violet stain, will contain fluid depending on the tests your institution runs, see the procedure supplied with the reagents. Any used vats need to be checked to verify their fluid levels, replenish as required. **To avoid splashing of stain, fill the stain vats only half full.**

3. Port 4 should be connected to the waste vat or drain. Check that the waste tubing is unrestricted. Check the waste vat and empty if necessary. The waste vat includes an overflow sensor, and a message will appear when the waste vat needs emptying during operation.

4. Turn on the power switch, located on the right side of the instrument. After initialization performs the self-test, the display shows the first enabled test and you are ready for operation. No warm up time is necessary.

7.2. Positive Patient ID

1. If positive patient ID was enabled during setup, you will be able to use a barcode reader to scan the barcode labels on the sample tray and gel, in either order.

2. With the electrophoresis chamber lid open, the instrument allows you to move the applicator out of the way to scan the barcode labels. The following display appears.

TO MOVE APPLICATOR LEFT PRESS (start) TO MOVE APPLICATOR RIGHT PRESS (continue)

3. Press the appropriate key to move the applicator so you may scan the barcode labels. The barcode label on the sample tray must begin with the letter T and on the gel with the letter G, and the remaining character/digit combination must be identical.

4. If the labels match, the operation will continue.

5. If the labels do not match, the operation can not continue until this problem is corrected and both the labels are rescanned.

6. Once scanning is complete and correct, close the chamber lid and the display returns to the name of the test.

7.3. Instrument Operation

7.3.1. Kit Supplied Procedures

For instructions on specimen collection and handling, reagent preparation, preparation of patient samples and controls, handling of sample cups and tray (Figure 7-2), applicator blades (Figure 7-1), and gel and gel holder refer to the appropriate sections in the procedure supplied with the kits.

7.3.2. TEST SELECT/CONTINUE Keys

Both of the **TEST SELECT/CONTINUE** keys are used, for their side, to scroll through the list of tests, to scroll through the test's operations, and to continue to the next operation after completing the displayed prompt. The display will indicate which function the key will perform.

7.3.3. START/STOP Keys

Both of the **START/STOP** keys are used, for their side, to start the displayed test, run the displayed operation, pause the current operation, and abort the current test. The display will indicate which function the key will perform.

7.3.4. Instrument Alarm

When a prompt is accompanied by an alarm, the alarm will stop when, on the electrophoresis side, you open the lid, and on the stainer side, you remove the gel holder. With the alarm silenced, you can resolve the prompt message, which may be a step required at that time for the particular test or a problem which has occurred. After you resolve the prompt message, press the indicated key to proceed.

7.3.5. Start Test at Any Operation

To start a test at any operation during the test, press that side's **START/STOP**. The display shows the first operation on the first line, and the display below appears on the second line.

```
(start) RUN  (continue) NEXT OPERATION
```

Normally, you would press **START/STOP** to begin the operation. However, if you want to start at a different operation in the test, press the **TEST SELECT/CONTINUE** key until the desired operation appears, then press **START/STOP**.

7.3.6. To Abort Operation

Press **START/STOP** during a procedure to stop operation at any time, except when a prompt is displayed that requires you to press the **TEST SELECT/CONTINUE** key (operation is already on hold until you press the **TEST SELECT/CONTINUE** key).

On the electrophoresis side, if the **START/STOP** key is pressed, operation will not stop, but timing is suspended until you respond to the display shown below, or until 10 seconds elapse.

```
PRESS (stop) TO ABORT
PRESS (continue) TO CONTINUE
```

Note that if the **START/STOP** key is pressed while the applicator is moving, abort is immediate. Aborting at any point in the test will cause the instrument to reinitialize and run a self-test.

On the stainer side, if the **START/STOP** key is pressed all pumps are stopped and all valves are closed until you respond to the display shown below, or until 10 seconds elapse.

PRESS (stop) TO ABORT PRESS (continue) TO CONTINUE

Note that if the **START/STOP** key is pressed while the valve is moving, abort will not occur. Aborting at any point in the test will cause the instrument to re-initialize and run a self-test.

7.3.7. Electrophoresis Specific Information

If the chamber lid is opened at the beginning or during electrophoresis, the power to the chamber is cut off and the following message displayed.

Close lid to continue

CAUTION: Shock hazard. Never touch the chamber during electrophoresis.

Once the lid is closed, the electrophoresis operation will continue.

7.3.8. Stainer Specific Information

1. If liquid is present in the chamber, when you press **START/STOP** to start a test, the chamber will evacuate to port 4 for approximately 5 seconds, while the display states *DRAINING PUMP*. When complete, operation will continue based on the test selected.

2. To attach the gel to the gel holder, place the round hole in the mylar gel on the left pin of the holder, the obround hole in the mylar gel on the right pin of the holder, and the **center of the gel under the prongs on the holder** (Figure 7-3).

3. After the test is finished, the gel is removed, the gel holder is replaced, and you press the **TEST SELECT/CONTINUE** key. Deionized water from the Maintenance Wash vat is pumped into the chamber for approximately one second. The fluid remains in the chamber until the next test is run.

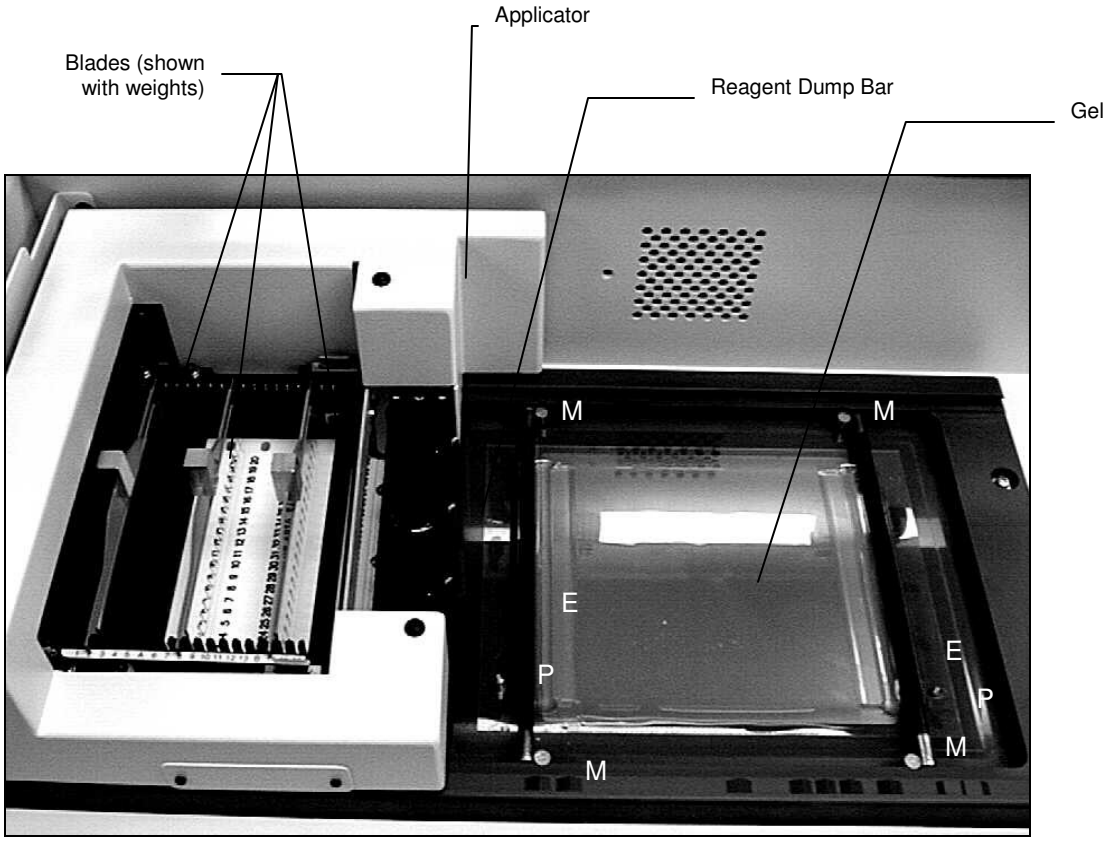
4. Once the next test to be run is selected, if it does not use a Stain and the previous test did use a Stain, the instrument will automatically wash the Stainer chamber with deionized water for approximately seven minutes. The instrument will prompt to remove the gel plate from the gel holder (plate out), replace the gel holder (holder in) and begin the wash (press continue). Once the wash cycle is complete, the instrument will prompt to replace the gel plate and to reinsert the gel holder.

7.4. Results

Refer to the procedure supplied with the reagents for a complete discussion of results and their interpretation.

7.5. Cleanup

The sample cups, applicator blades, and reagent vials should be handled and disposed of as biohazards. See section 10.1, Maintenance, for information on cleaning the instrument and all reusable pieces. Cleaning is required at different times during the use of the instrument, after every test, daily, etc. and is specified in section 10.1.



M = Magnets, E = Electrodes, and P = Pins

Figure 7-1 Blades in Applicator, Gel in Chamber

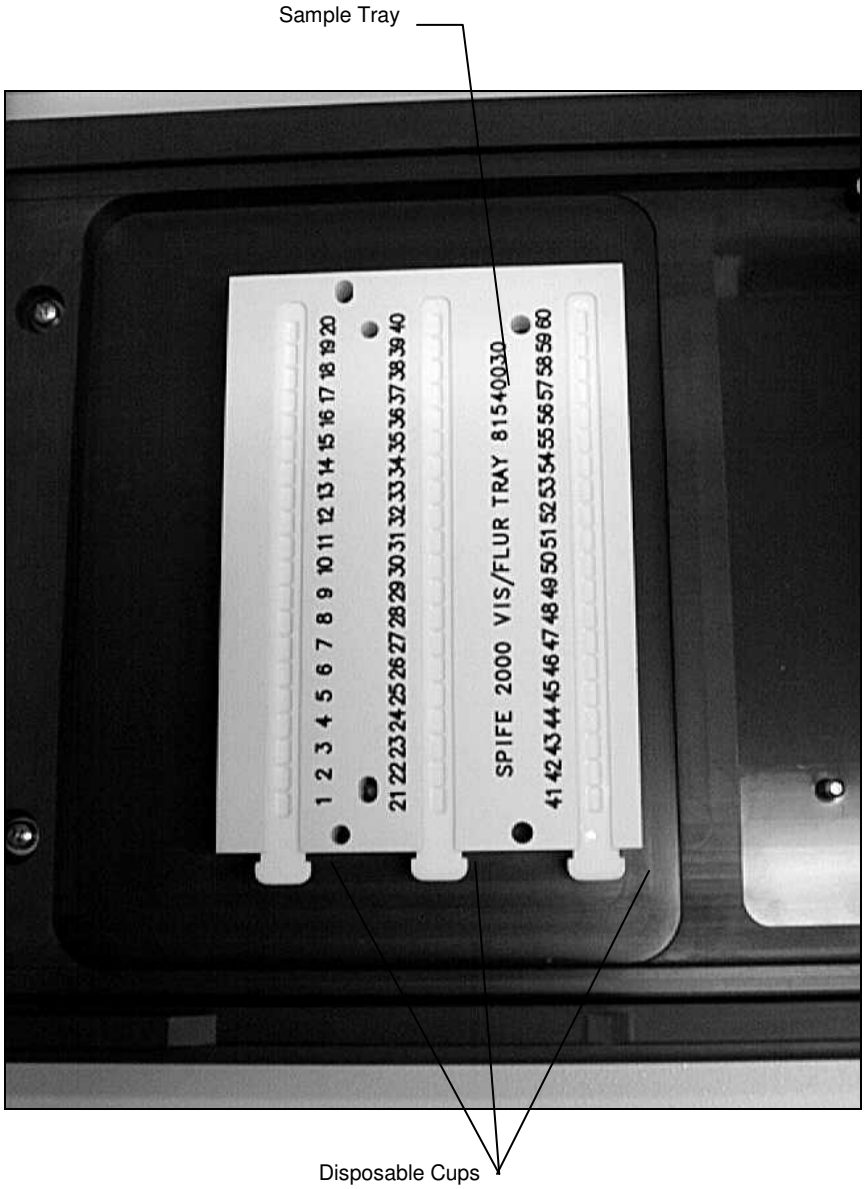


Figure 7-2 Placement of Sample Tray with Disposable Cups

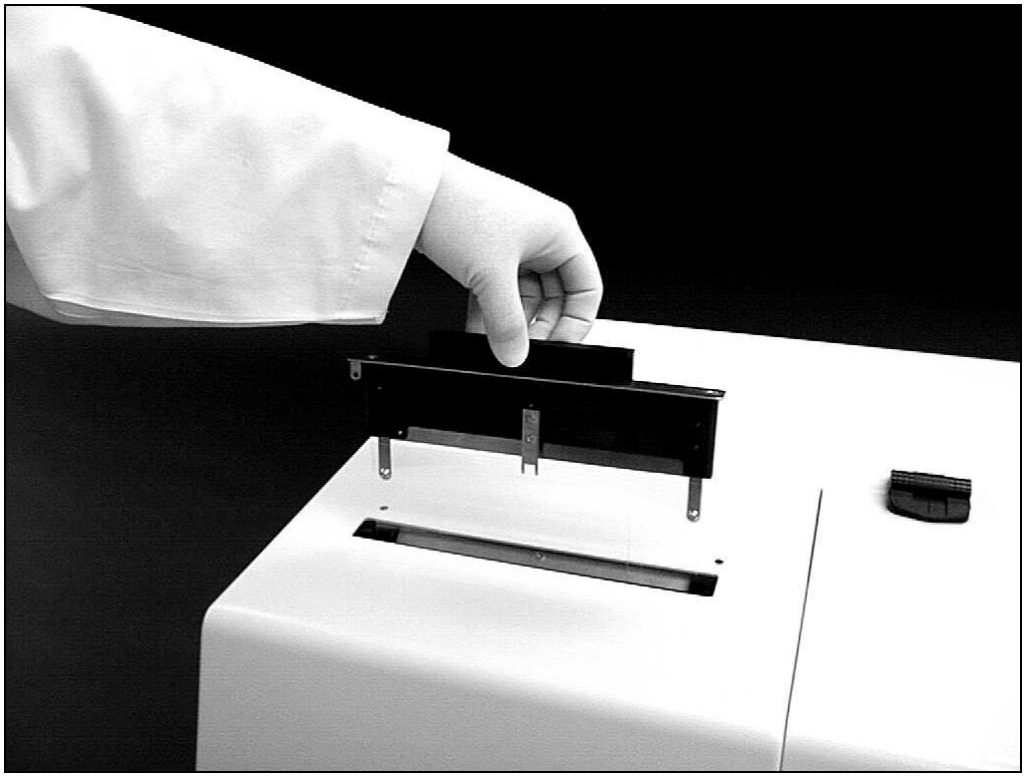


Figure 7-3 Gel and Gel Holder Above Stainer Chamber

Section 8 - Test Functions and Quality Control

The instrument automatically initializes and performs a self-test any time the power is turned on or a test is aborted. Should an error message appear on the display, see section 10.2, Troubleshooting.

A control should be run on each electrophoresis gel. Control data should be compared to the assay ranges printed on the assay sheet provided with the control. The patient data should be compared to the normal range values for the procedure in use and to the laboratory normal range values. Each laboratory should establish its own normal range of expected values for the procedures in use. Refer to the procedure supplied with the reagents for further information.

Section 9 - Performance Specifications

Test Types:
Serum Protein, Serum or Urine IFE, CSF IgG IEF, Acid Hemoglobin, Alkaline Hemoglobin, Alkaline Phosphatase, Cholesterol Profile, LD Isoenzyme, CK, Split Beta SPE, and Lipoproteins

Displays:
Two, 2x40 character liquid crystal displays

Timer Range:
1 sec. to 99 min. 59 sec. in 1 second increments

Chamber Temperature Range:
10° to 62°C (50° to 144°F)

Stainer Drying Temperature Range:
30° to 70°C (86° to 158°F)

Input Power:

120 Vac Model Cat. No. 1088:
120 Vac, 50/60 Hz

240 Vac Model Cat. No. 1089:
240 Vac, 50/60 Hz

Fuses:

120 Vac Model Cat. No. 1088:
F1, F2: 15A/250V slo blo
F3, F4: 6A/250V slo blo
F5, F6: 6A/250V slo blo
F7, F8: 10A/250V slo blo

240 Vac Model Cat. No. 1089:
F1, F2: 8A T/250 V
F3, F4: 6.3A T/250 V
F5, F6: 6.3A T/250 V
F7, F8: 5A T/250 V

Dimensions:
12 in. (30 cm) High
36 in. (91 cm) Wide
21 in. (51 cm) Deep

Weight: 78 lb. (35 kg)

Operating Environment:
15° to 27°C (59° to 80°F)

Optional Isolation Transformer Specifications
Input Voltage: 120V (or 230V)
Output Voltage: 120V (or 230V)
Power Range: 2000 VA
Frequency: 60 Hz (or 50 Hz)
Isolation: 4000 VRMS
Leakage Current: Less than 500 µA
Voltage Tolerance: 3%

Section 10 - Maintenance, Troubleshooting, Warranty

10.1. Maintenance

This section describes routine operator maintenance procedures. The procedures included with the kits may also contain required maintenance. For instrument calibration or for maintenance not described in this manual, call Helena Laboratories for assistance.

WARNING: The SPIFE 3000 is factory lubricated. Do NOT lubricate the instrument.

Table 10-1 Maintenance Schedule Summary

After Every Test
Clean Electrophoresis Chamber
Clean Electrodes
Clean Rigid Antisera Template
Clean Sample Base
Daily, If Used
Perform Maintenance Wash
Weekly
Clean Stainer Level Detectors
Monthly
Clean Waste Level Sensor
As Needed
Fuse Replacement
Replace Contact Sheet
Clean Gel Holder
Clean Antisera Tray
Clean Instrument
Rinse/Replace Reagent Vat(s)

After Every Test

10.1.1. Clean Electrophoresis Chamber

After every test, clean the electrophoresis chamber. First, ensure that the chamber floor is not hot, then dampen a lint-free tissue with deionized water and wash the surface of the electrophoresis chamber.

Should the chamber be contaminated by blood or blood derivative, first **turn off the power and unplug the power cord**, then spray any contaminated surface with a commercial virucidal and germicidal agent. Wipe up the residue. These materials contain alcohol and alcohol is a corrosive to metal surfaces. Dry the unit before plugging the power cord in.

10.1.2. Clean Electrodes

Remove and rinse the electrodes in deionized water. Dry with a lint-free tissue. Replace electrodes in the instrument.

10.1.3. Clean Rigid Antisera Template

After each test, clean the template with soap, water, and a soft brush. Rinse thoroughly with water. Dry the template thoroughly with lint-free tissues.

10.1.4. Clean Sample Base (Non-Disposable Type)

After use, soak the sample base in REP Wash for approximately 15 minutes, rinse thoroughly with water, then with deionized water. Drain water and dry the tray thoroughly with lint-free tissues.

Daily, If Used

10.1.5. Perform Maintenance Wash

At the end of the day, if used, ensure that the Maintenance Wash vat is filled with deionized water and is attached to port 7, then perform the maintenance wash procedure. On the stainer side, press **TEST SELECT**/ **CONTINUE** until *MAINTENANCE* is displayed, then press **START**/**STOP**.

As the final step in the wash, the liquid will not be drained from the chamber. The following message is displayed.

PRESS ANY KEY TO EMPTY CHAMBER

This condition will remain until a key is pressed, at which time the chamber will drain. The instrument will then return to the standby mode.

This system soak function is designed to enhance the cleaning of the system and to prevent sticking of the valve and pump. As a result, the user may leave the liquid in the chamber as necessary.

Weekly

10.1.6. Clean Stainer Level Detectors

Clean the stainer level detectors weekly, or any time a stainer level detector fails. Turn off the power and unplug the power cord. Remove the gel holder in order to access the chamber interior. Use a maintenance swab dipped in alcohol to clean the level detectors. When viewed from the front of the unit, the detectors are located on left side in the recessed areas of the stainer chamber near the top and bottom. When finished, plug in the power cord, turn the power on, and perform a Maintenance Wash (see section 10.1.5).

Monthly

10.1.7. Clean the Waste Level Sensor

1. Unscrew the waste vat cap and remove it from the waste vat.

2. Remove the two pieces of tubing from the vat cap.

3. Turn the vat cap over and hold the waste level detect sensor under running tap water, removing any residue.

4. Screw the waste vat cap back onto the waste vat and replace the two pieces of tubing.

As Needed

10.1.8. Fuse Replacement

1. Turn off the power and unplug the power cord.

2. Using the provided screwdriver, which matches the slot in the fuse holder, press inward and turn the fuse holder counterclockwise to remove the fuse holder (Figure 10-1).

3. Remove the blown fuse and replace it with one of the same type and rating.

4. Push the fuse holder in and turn clockwise, with the screwdriver, to reseat the fuse.

5. Repeat for the other fuses as necessary.

6. Plug in the power cord and turn on the power. If the fuse immediately blows again, call Helena Laboratories for assistance.

10.1.9. Replacing Contact Sheet (Electrophoresis Chamber Insulation)

The contact sheet, which insulates the electrophoresis chamber floor, may fatigue after extended use. An indication of this is a high voltage error during electrophoresis. Another indication is repeated distortion of an area of the electrophoresis gel, which can be related to a deformity in the underlying contact sheet. In either instance, replacement of the contact sheet is recommended.

1. Heat the electrophoresis chamber using the *Dry 1* operation in the Serum Protein test. See section 7.3.5 for instructions on starting a test at any operation. Once the chamber is almost to temperature a timer displays. Allow the timer to count down two minutes and then stop the test.

2. Turn the power switch Off and unplug the power cord.

3. Remove the old contact sheet by slowly peeling it off, beginning from the right rear of the chamber floor.

4. Remove all remaining adhesive from the surface of the chamber floor using an Adhesive Remover Pad provided with the contact sheets. Once all the adhesive is removed, clean the chamber floor with methanol and a gauze.

5. Any corrosion should be smoothed off the chamber floor. Using the 600 grit emory cloth, provided with the contact sheets, and sanding with the grain of the chamber floor, smooth any corrosion. Use caution not to alter the flatness of the chamber floor. Clean any debris from the chamber floor with methanol and a gauze. It is important that the chamber floor be completely flat, smooth, and free of any material.

6. Plug in the power cord and turn the power switch On.

7. As in step one, heat the electrophoresis chamber; however, allow the timer to count down five minutes and then stop the test.

8. Turn the power switch Off and unplug the power cord. Allow the electrophoresis chamber to cool for approximately five minutes.

9. Obtain a new contact sheet from the package. For easier installation, peel back the contact sheet's backing about 1/4" to 1/2" along the side of the contact sheet with the two holes.

Note: Contact sheets must stay in their container so that they will remain flat. If sheets roll up, leave them rolled up so that they will not come loose from the backing. Rolled sheets are more difficult to apply but may still be used as long as the backing has not separated from the sheet, allowing the adhesive to dry out.

10. Holding the contact sheet adhesive side down, align the holes in the contact sheet over the pins located toward the front of the chamber floor. For the contact sheet to lay smoothly on the chamber floor, the contact sheet should not touch the sides of the pins. Press the contact sheet to the chamber floor, beginning between the pins, and rub outward.

11. Continue peeling the backing from the contact sheet, rubbing the contact sheet down with a side-to-side stroke. Avoid wrinkles and bubbles; the sheet may be peeled up slightly, taking care not to stretch it, and smoothed down again to create a flat surface. Rub all the edges of the contact sheet, using a clean gauze, to insure the adhesive sticks to the chamber floor.

12. When the entire sheet is in place, it should lay completely flat and smooth. If the contact sheet has been stretched, it may be difficult to smooth out the wrinkles. If this occurs, replace the contact sheet.

13. Plug in the power cord and turn the power switch On.

10.1.10. Clean Gel Holder

Any time you see a residue on the gels after staining and drying, clean the gel holder.

1. Remove the gel holder from the stainer chamber.

2. Wipe off all residue on the gel holder with a cloth soaked in Destain, rinse in deionized water, then dry with a lint-free tissue. For heavy accumulations, soak the gel holder in Destain until residue can be removed, then rinse in deionized water and dry.

3. Replace the gel holder in the stainer chamber.

10.1.11. Clean Antisera Tray

Clean the Antisera tray (if used) with soap, water, and a soft brush. Rinse thoroughly with water. Dry the tray thoroughly with lint-free tissues.

10.1.12. Clean Instrument

Should the instrument be contaminated by blood or blood derivative, first **turn off the power and unplug the power cord**, then spray any contaminated surface with a commercial virucidal and germicidal agent. Wipe up the residue. These materials contain alcohol and alcohol is a corrosive to metal surfaces. Dry the unit before plugging the power cord in.

Should the instrument become stained, dampen a scrubbing pad with water. Apply a small amount of Dial® Antibacterial Soft Scrub® with Bleach Cleanser to the rough side of the pad. Firmly scrub stained area of the instrument. Use the sponge side of the pad to wipe off excess cleanser. Dampen a paper towel and wipe off remaining residue.

10.1.13. Rinse/Replace Reagent Vat(s)

Prior to refilling reagent vats, rinse them with hot water and then with DI water If mold develops in vats, replace vat, cap, and tubing (reagent vats - 2 liter 9B884011 and 2½ gallon 9B584011, stain cap with tubing 8JM54006, wash cap with tubing 8JM32027, 9C270013 13L destain container, and 8JM54149 destain cap)

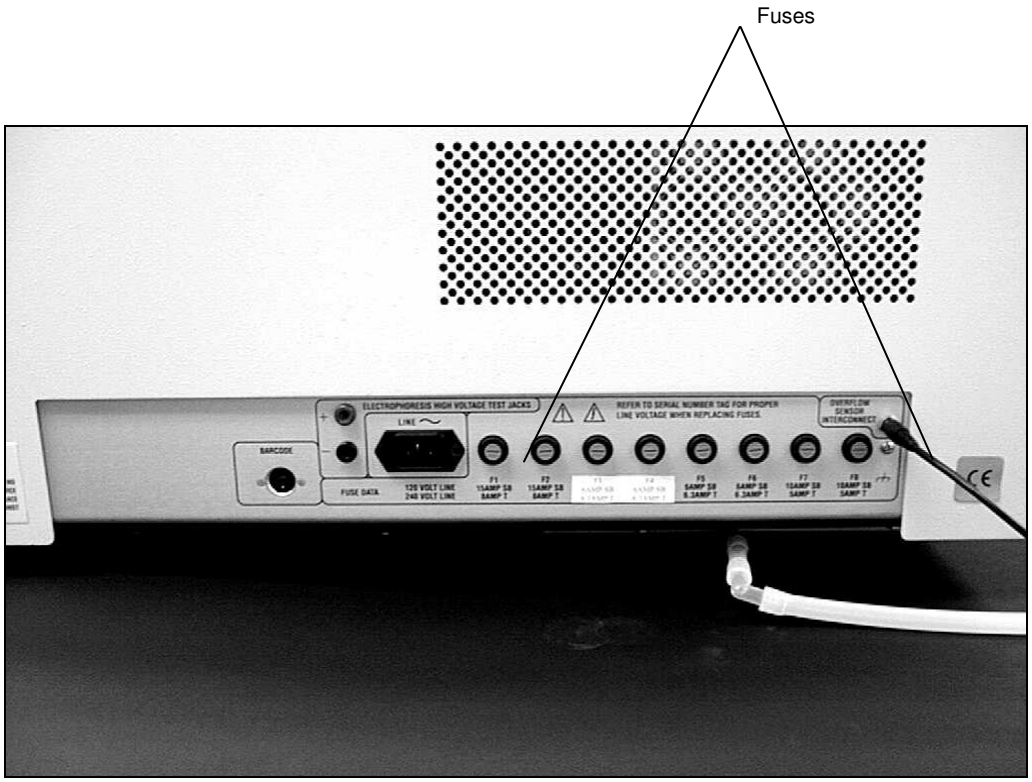


Figure 10-1 Fuses

10.2. Troubleshooting

If the recommended solutions should fail to solve a problem, call Helena Laboratories for assistance.

Table 10-2 Troubleshooting

Problem	Possible Cause	Solution
No power to instrument	Power cord unplugged	Plug cord into proper wall outlet.
	Fuse blown	Check fuses on back of unit. Replace, if required.
Error message is displayed	Error found during self-test or operation	Do as directed by the message. If message returns, call Helena Laboratories for assistance.
Electrophoresis chamber not reaching programmed temperature	Fuse blown	Check fuses on back of unit. Replace, if required.
	Electrical problem	Call Helena Laboratories.
Cycle will not start when press SELECT or START	Lid not closed	Close lid.
	Fuse blown	Check fuses on back of unit. Replace, if required.
	Broken electrode	Replace electrode or call Helena Laboratories.
	Electrical problem	Call Helena Laboratories.
No power to stainer chamber	Fuse blown	Check fuses on back of unit. Replace, if required.
	Electrical problem	Call Helena Laboratories.
Incubator or dryer too hot	Electrical problem	Call Helena Laboratories.
Fan does not run	Restricted air flow	Remove obstructions and check to be sure enough air space surrounds instrument.
	Electrical problem	Call Helena Laboratories.
Gel appears unacceptable	Programming problem	Check programming for the test against your record of programmed parameters (see 6.3) and reenter, if parameters have been changed
	Other problem	If programming is OK, check reagent bottles and repeat test. If still unacceptable, call Helena Laboratories

Stainer level detector failures	Dirty stainer chamber	Use Maintenance Swab dipped in Destain solution to clean inside of stainer chamber, especially around level detector probes
	No fluid in chamber	Ensure that stain vat(s) are correctly connected to the instrument and that the vat(s) contain fluid
Reagent does not dump	Programming Problem	Check programming for the test against your record of programmed parameters (see 6.3) and reenter, if parameters have been changed
	Electrical Problem	Call Helena Laboratories
Stainer chamber incorrectly filling/draining	Stainer Value/Pump Failure	Call Helena Laboratories
Electrophoresis high voltage error	Fatigued Contact Sheet	Replace contact sheet (see 10.1.9)
Electrophoresis gel has repeated distortion in same area	Fatigued Contact Sheet	Replace contact sheet (see 10.1.9).

10.3. Warranty

Helena Laboratories warrants its products to meet Helena's published specifications and to be free from defects in materials and workmanship. Helena's liability under this contract or otherwise shall be limited to replacement or refund of any amount not to exceed the purchase price attributable to the goods as to which such claim is made. These alternatives shall be the buyer's exclusive remedies.

In no case will Helena Laboratories be liable for consequential damages even if Helena has been advised as to the possibility of such damages.

The foregoing warranties are in lieu of all warranties expressed or implied, including, but not limited to, the implied warranties or merchantability and fitness for a particular purpose.

Section 11 - Symbology

NOTE: The following symbols may be used in this manual, or on the instrument, to provide information necessary to the user, if applicable.

	Caution, electric shock hazard, high voltages capable of causing personal injury - shut down the instrument and unplug the power cord before touching - do not operate with the cover(s) removed
	Caution, heat hazard - allow heated components to cool before handling
	Caution, general hazard - see Precautions and Hazards (Sections 3 and 4) of Operator's Manual before proceeding
	Direct current
	Alternating current
	Both direct and alternating current
	Ground (earth) terminal
	Protective conductor terminal (grounded conductors)
	Frame or chassis terminal
	Equipotentiality (conductor with all parts at a single potential)
	On (power switch)
	Off (power switch)
	Equipment protected throughout by double insulation or reinforced insulation (equivalent to Class II of IEC 536)

SPIFE® 3000

Operator's Manual

For additional information, call
Helena Laboratories at 800-231-5663, toll free.

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